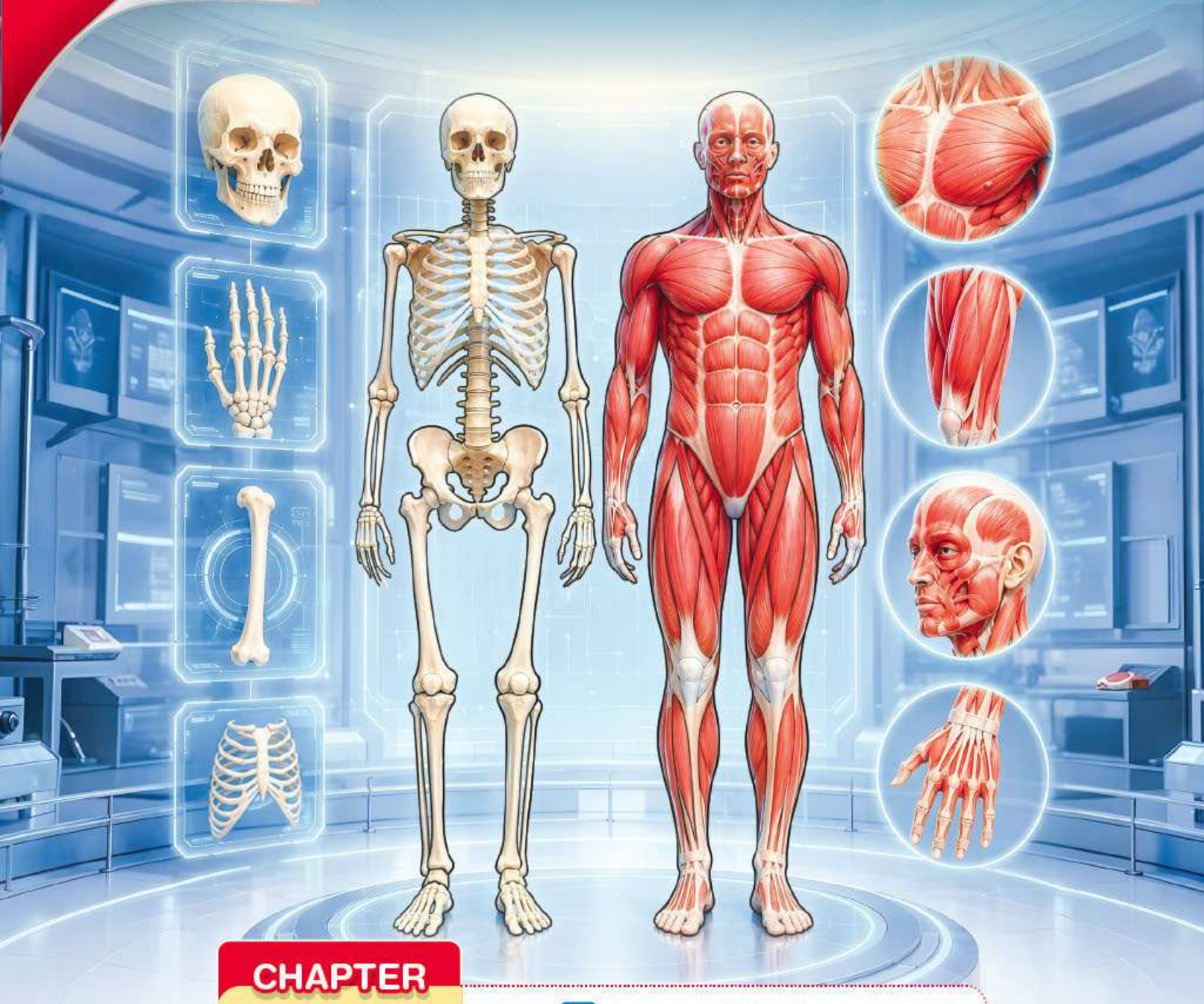
CHAPTER ONE

Bones and Muscles



CHAPTER

1

- Lesson 1 Bones and Muscles
- Lesson 2 Structure of Bones
- Lesson 3 Whole Body Skeleton
- Lesson 4 Animal Bodies

EL-MOASSER

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CHAPTER 1 LESSON 1

Bones and Muscles

Have you ever thought about how you can run fast or jump high ?

How can you bend your arm ?

The fact is in the cooperation between the different parts of the body, where the human body has soft muscles and hard strong bones, each having a role in causing movement.

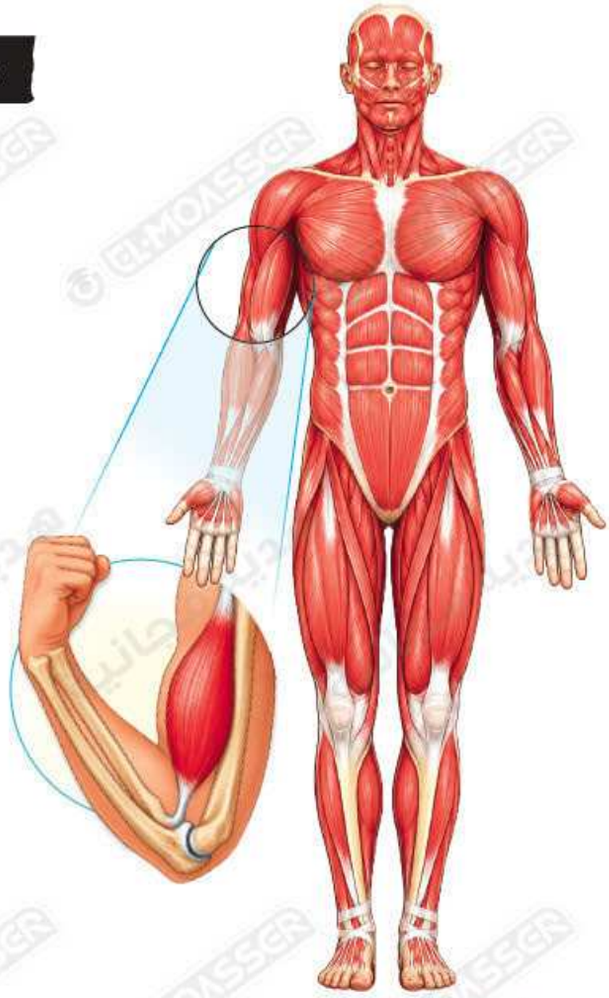
Muscles

What is meant by Muscles

They are soft body parts that cause the movement of bones.

Location :

Muscles locate under the skin and cover most parts of the body.



Muscles in human body

Their function

Muscles help the body to move ... G.R?

Because they pull the bones attached to them,causing body parts to move.

bones	العظام	muscles	العضلات	bend	يثنى
cooperation	تعاون	soft	ناعمة	movement	حركة
skin	جلد	pull	سحب / شد	attach	مرتبط بـ

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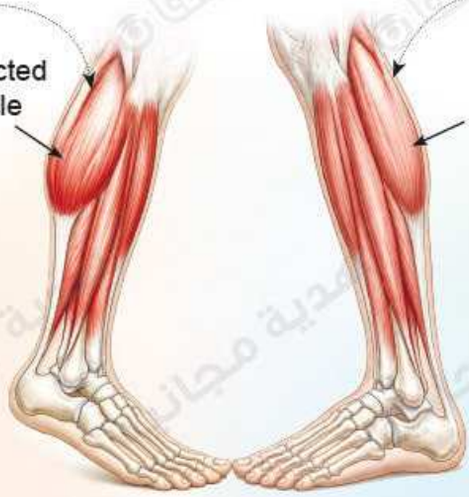
How muscles work

- Muscles work in a simple way, they contract and relax as follows:

Muscle contraction

- When the muscle contracts
- it becomes shorter and more hard (harder)
- pulling the bone attached to it.



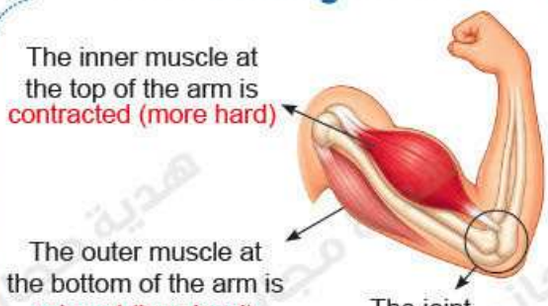
Muscle relaxation

- When the muscle relaxes
- it becomes longer and less hard (softer)
- returning to its normal state.

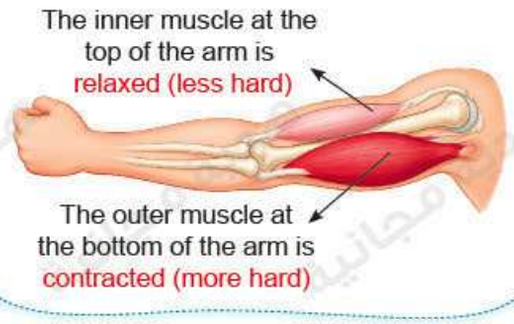
Example **Moving the arm:**

- The inner and outer muscles cooperate together at the upper part of the arm to move it easily as follows:

When bending the arm


The inner muscle at the top of the arm is contracted (more hard)
The outer muscle at the bottom of the arm is relaxed (less hard)
The joint

When stretching (extending) the arm


The inner muscle at the top of the arm is relaxed (less hard)
The outer muscle at the bottom of the arm is contracted (more hard)

Take care :

- Muscles often work in pairs (one muscle contracts and another muscle relaxes) ... G.R?
  To allow the movement of bones.
- The part where the arm bends and helps the muscles to move the bones attached to it is called a «joint».

contraction	انقباض	relaxation	ارتخاء	outer muscle	عضلة خلقية
inner muscle	عضلة أمامية	extending	بسط / مد	joint	مفصل
bending	انحناء / ثنى	stretching	تمدد	pairs	أزواج

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Questions of El-Moasser Book

1 Complete the following sentences:

① The human body can move as a result of ..... and ..... of muscles.
② When extending the arm, the outer muscle .....
③ Muscles move the body by ..... the bones.

2 Put [✓] or [✗]:

① The human body has hard and strong muscles. ( )
② When bending the arm, the muscle at the top of the arm becomes contracted. ( )
③ Muscles locate under the skin only. ( )

3 What is meant by muscles?

.....
.....

4 Look at the opposite figure, then answer:

What happens to the arm muscles of this man when he holds a heavy box ?

- The inner muscle will ..... - The outer muscle will .....

5 Give reasons for:

① Muscles often work in pairs.
.....
② For stretching the arm, the outer muscle of the upper part of the arm becomes shorter and harder.
.....

6 Choose the correct answer:

① The human can walk because .....
ⓐ leg muscles relax only. ⓑ leg muscles contract only.
ⓒ leg muscles contract and relax. ⓓ bones contract and relax.

② When bending the arm, the outer muscle of the upper part of the arm becomes .....
ⓐ hard and short. ⓑ soft and long.
ⓒ hard and long. ⓓ soft and short.

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CHAPTER 1 LESSON 2

Structure of Bones

You have learned the role of muscles in causing movement. Now, we will learn about other parts that enable your body to bend down to pick something up from the ground or bend your knees when jumping, which are: Bones and Joints.

Bones

What is meant by Bones

They are hard and strong structures that form the body skeleton.

Their function **Bones have a main role in:**

1. Supporting the body.
2. Protecting the organs of the body like the brain and heart.

Take care:

Bones cannot move easily on their own, so the body needs special locations called joints.

Joints

What is meant by Joint

It is the place (location) where two or more bones connect (meet).

Their function

Joints help in connecting bones to each other.

structure	تركيب	body skeleton	الهيكل العظمى	knee	ركبة
function	وظيفة	special locations	أماكن خاصة	support	يدعم
protect	يحمى	organs	أعضاء	connect	يربط / يصل

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Types of Joints

Joints in the body differ according to the type of movement they allow, so they are divided into:

A Joints that allow movement in more than one direction

(Such as forward, backward, sideways, and circular movements).

Examples

B Joints that allow movement in one direction

(Such as forward and backward movement only, or up and down).

Examples

1 Shoulder joint

Helps to raise the arm.

2 Hip joint

Helps to:
- Stand and sit.
- Walk and run.

3 Wrist joint

Helps to move the palm of the hand.

1 Elbow joint

Helps to bend and stretch the arm.

2 Finger joints

- Help to bend and stretch the fingers.
- There are 14 joints in the fingers of one hand.

3 Knee joint

Helps to:
- Bend and stretch the leg.
- Stand and sit.
- Walk and run.

4 Ankle joint

Helps to move the foot.

direction	اتجاه	elbow	كوع	ankle	كاحل
backward	للخلف	forward	للأمام	shoulder	كتف
wrist	معصم / رسغ	sideways	للجانبين	hip	فخذ / ورك

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We conclude from the previous explanation that :

- The body joints help in:
  - Walking and running.
  - Bending the arms and legs.
  - Moving the body.
- Joints (shoulder, elbow, and wrist) are among the joints of the upper part of the body (arms and hands).
- Joints (hip, knee, and ankle) are among the joints of the lower part of the body.

Cartilages

- In order for bones to move easily, joints contain what is called **"cartilage"**.

What is meant by Cartilage

It is a part that acts as a cushion between the ends of bones.

Their function

Cartilages reduce rubbing (friction) of bones against each other, which protect the bones from wearing out during movement.

In the Assessment Book :

Try to answer :

Weekly Assessment (1) [in part (2)]

cartilages	غضاريف	cushion	وسادة	friction	احتكاك
rubbing	احتكاك	wear out	تآكل	reduce	يقلل

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Questions on Chapter 1

LESSON 2

Structure of Bones

Answered

First Questions of El-Moasser Book

1 Choose the correct answer from those between brackets :

① The human body contains hard and strong ..... (bones – muscles)

② ..... are considered the meeting place of bones with each other. (Joints – Muscles)

③ The shoulder joint is located in the ..... part of the body. (lower – upper)

2 What is the function of cartilage ?

.....

3 Classify the following joints into joints that allow movement in one direction and joints that allow movement in different directions in the following table :

(Elbow joint – Wrist joint – Hip joint – Knee joint – Ankle joint – Shoulder joint – Finger joints)

Joints allow movement in one direction	Joints allow movement in different directions
.....	.....
.....	.....

4 What is meant by [Define] :

① Bones : .....

② Cartilage : .....

Second Questions of the School Book Lessons 1 & 2

A Try

1 ① When you bend your arm, what happens to the inner muscle [the biceps]? Choose the correct answer from below.

ⓐ It relaxes and extends.

ⓑ It contracts and becomes harder.

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② Choose the correct word from below to fill in the blank:

Muscles pull bones by .....

ⓐ relaxing. ⓑ contracting. ⓒ expanding.

2 ① What do you call the place where two bones meet and allow movement?

(.....)

② Which statement correctly explains the movement of joints?
Choose the correct answer from below.

ⓐ All joints in the body can be rotated in any direction.

ⓑ The direction and range of bending are decided by the location of the joint.

③ Fill in the blank with the correct word:

Joints have ..... which act as a cushion, so that bones do not rub directly against each other and wear out.

B Exercise

1 ① Which is correct about the state of the muscles when you stretch your arm?
Choose the correct answer from below.

ⓐ The outer muscle contracts, and the inner muscle relaxes.

ⓑ The inner muscle contracts, and the outer muscle relaxes.

② Which statement correctly explains the movement of the human body?
Choose the correct answer from below.

ⓐ Muscles move the body by "pushing" the bones.

ⓑ Muscles move the body by "pulling" the bones.

2 ① Which of the following is NOT a role of bones?
Choose the correct answer from below.

ⓐ Support the body firmly.

ⓑ Protect important organs like the brain and heart.

ⓒ Can contract and move by itself, just like muscles.

② What do you call the part in joints that acts as a cushion, so bones don't rub against each other?

(.....)

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CHAPTER 1 LESSON 3

Whole Body Skeleton

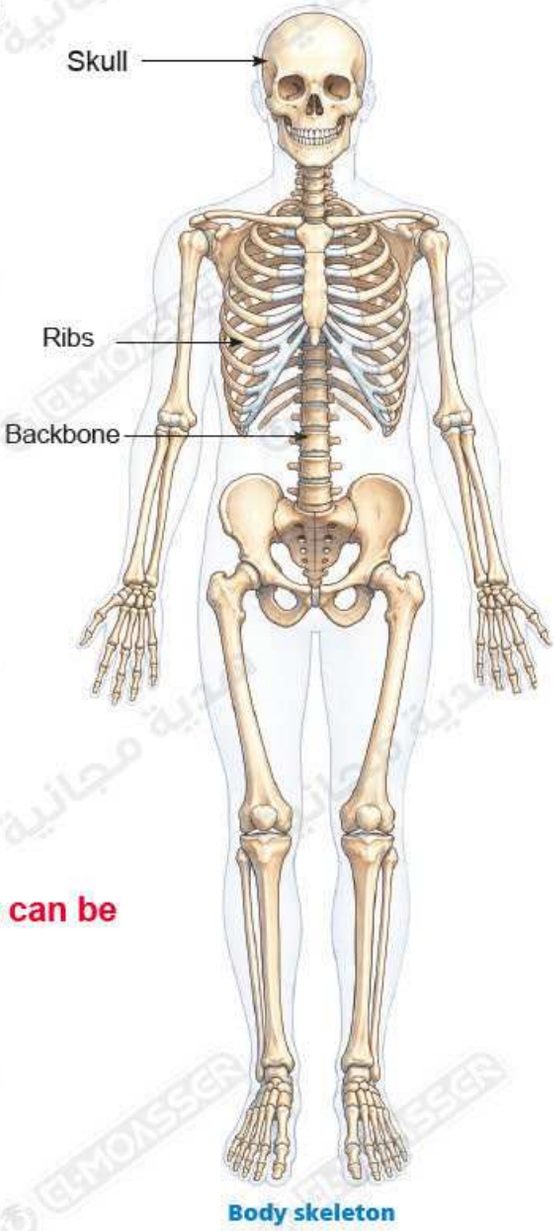
Bones connect to each other to form what is known as the "body skeleton".

Body Skeleton

- The skeleton of the human body is made up of about **206 connected bones**.

What is meant by Skeleton

It is the structure (framework) in which many bones combine to form the whole body.



Body skeleton

Its function

1. It supports the body.
2. It helps the body move in cooperation with muscles and joints.
3. It protects some organs of the body such as: The brain, heart and lungs.

- **Some parts of the skeleton and their functions can be explained as follows:**

body skeletom	الهيكل العظمى	framework	إطار	skull	جمجمة
ribs	ضلوع	backbone	العمود الفقرى		

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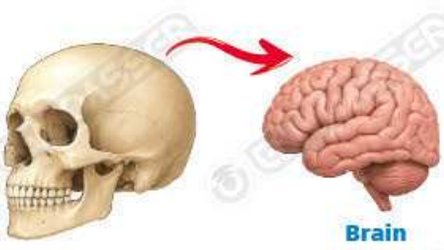
1 Skull

- Location : It is found in the head region.
- Description : It consists of strong bones acting like a helmet.
- Function : It protects the brain (a soft organ).

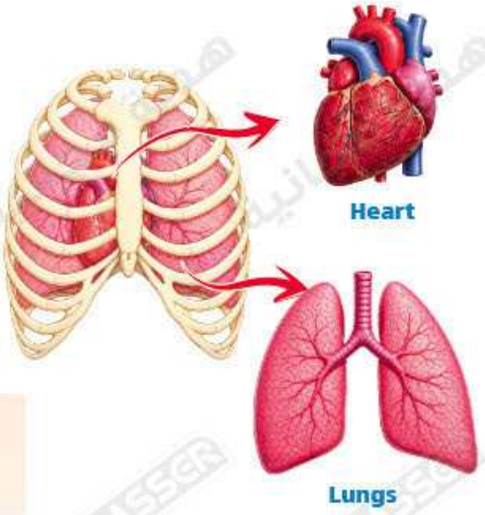


2 Ribs

- Location : They are found in the chest region.
- Description : They consist of thin bones found on both sides of the chest to form a cage-like shape.
- Function : They protect the heart and lungs.

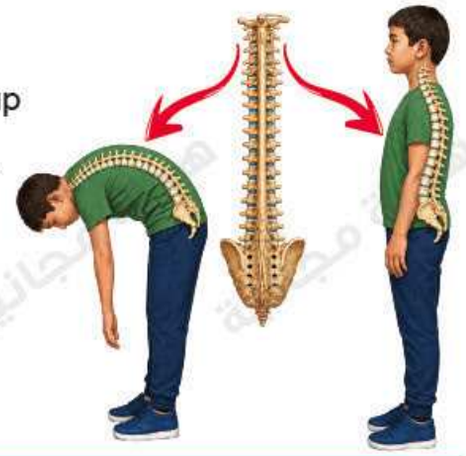
Take care :

The chest region moves slightly forward during breathing.



3 Backbone

- Location : It is found in the back region.
- Description : It consists of small bumpy bones lined up vertically and connected in a single line.
- Function :
  1. It acts as a pillar that supports the whole body.
  2. It provides the body with flexibility that helps it bend and move in different directions.



chest region	منطقة الصدر	pillar	دعامة	flexibility	المرونة
cage-like shape	شكل يشبه القفص	slightly	قليلًا / بشكل بسيط	bumpy bones	عظام بارزة
breathing	التنفس	helmet	خوذة		

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Questions of El-Moasser Book

1 Complete the following sentences:

① The skeleton of the human body is made up of about ..... connected bones.

② The skull protects the ..... , while the ribs protect the .....
and .....

2 What is meant by the skeleton?

.....

3 Give a reason for :

① The skull consists of solid bones.

.....

② Backbone has a great importance to the human body.

.....

4 Choose the correct answer :

① The ribs consist of .....

ⓐ small bumpy bones lined up vertically.

ⓑ thin bones found on both sides of the chest.

ⓒ thick bones found on both sides of the chest.

ⓓ large bones found in the back.

② The human body can bend in different directions due to the presence of the .....

ⓐ ribs ⓑ skull. ⓒ backbone. ⓓ heart.

5 Mention the function of the skeleton :

.....

.....

6 Put [✓] or [×] :

① The backbone consists of strong bones acting like a helmet. ( )

② The skeleton of the human body consists of a group of connected muscles. ( )

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CHAPTER 1 LESSON 4

Animal Bodies

Animals and humans both have a skeleton with a backbone, and their bones and muscles work together in the same way.

- Similarities and differences in movement between the human body and animal bodies.

First Similarities in Movement

The movement of many animals, such as dogs, cats, and rabbits, is similar to human movement because many of these animals have inside their bodies:

1. A skeleton (contains many bones) similar to the human skeleton that helps them move.

2. Muscles that contract to pull the attached bones, causing body parts to move.

Take care :

Bones cannot move by themselves, but muscles work with bones to allow them to move.

3. Joints located where two or more bones meet, which help the bones to move easily, such as leg joints.

We conclude from the above that :

- The bodies of some animals are similar to the human body in the presence of:
  - Bones.
  - Muscles.
  - Joints.

similarities	تشابهات	differences	اختلافات	contract	ينقبض
allow	يسمح	easily	بسهولة		

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Second Differences in Movement

▸ **Animals differ according to their method of movement and their needs in :**

1. Shape and length of bones.
2. Muscle strength.

Rabbit

Has strong and long back legs (hind limbs) ... G.R.? to help it jump quickly.

Dog

Has limbs that help it walk and run steadily.

Cat

Has flexible muscles and joints... G.R.? to help it jump, climb, and move lightly.

We can conclude from the previous explanation that :

▸ Animals share the basic concept of movement:

As they have muscles that contract, bones that move and joints that facilitate movement, allowing them to walk, run, jump or perform its various movements.

▸ Animals differ from each other in:

- Their body shapes.
- Their method of movement.

Activity

Finding similarities and differences between human bones and bones of some animals.

Tools

Pictures of skeletons of human and some animals:

Human

Dog

Rabbit

differ	تختلف	method	طريقة	concept	مبدأ
steadily	بثبات	lightly	بخفة	perform	يعمل
facilitate	يسهل	needs	احتياجات		

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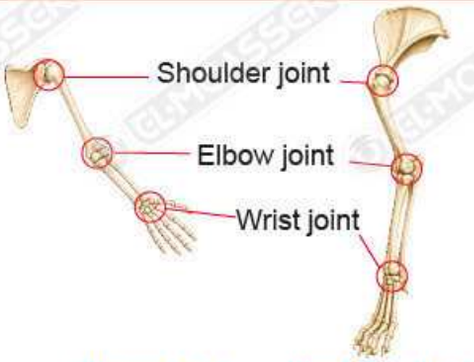
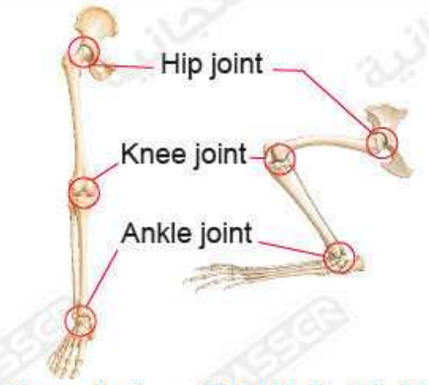
Steps

Step one	Pictures
Look at the picture of the skeleton for both the dog and the human, and focus on the bending points in the dog's front leg (forelimb).	

Step two	Pictures
Look at the picture of the skeleton for both the rabbit and the human, and focus on the long hind limbs of the rabbit.	

Observation

Living Organism	Observed Part	How it Helps with Movement
Human	• Upper limb (arm) contains: Joints (shoulder, elbow and wrist).	• Bending and extending the arm.
	• Lower limb (leg) contains: Joints (hip, knee, and ankle).	• Walking, and running.
Dog	• Forelimb contains: Joints (shoulder, elbow, and wrist).	• Bending the leg, walking, and running.
Rabbit	• Hind limb contains: Joints (hip, knee, and ankle).	• Running and jumping.

Conclusion

- The bones of some animals, like the dog and the rabbit, are similar to human bones.
- They are also similar in the presence of joints that help with movement, such as the elbow and knee joints.

forelimb طرف أمامى hind limb طرف خلفى

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First Questions of El-Moasser Book

1 Complete the following sentences:

① The way of movement is similar in both animals and humans due to the presence of ..... , muscles and ..... inside their bodies.

② According to the method of movement, animals differ from each other in the ..... and ..... of bones, and also ..... strength.

③ The bones of a dog's forelimb are similar to the bones of the human's ..... limb.

2 Compare between :

The joints of a dog forelimb and the joints of a rabbit hind limb (In terms of: How they help in movement).

.....

.....

.....

3 Put [✓] or [✗] :

① Bones and muscles of animals and humans work together in the same way. ( )

② The rabbit has strong and long hind limbs to help it walk and run steadily. ( )

4 Give reasons for :

① Animals share the basic concept of movement.

.....

② Cat has flexible muscles and joints.

.....

5 What happens ... ?

When the muscles of the body contract.

.....

.....

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Second Questions of the School Book Lessons 3 & 4

A Try

1 ① What do you call the framework of bones that forms the shape of the body?

(.....)

② Which important organs do the ribs protect in a cage-like shape?
Choose two correct answers.

ⓐ Brain. ⓑ Heart. ⓒ Lungs. ⓓ Stomach.

2 ① Choose the correct words from those between brackets to fill in the blanks about how animals move their bodies.

Animals like dogs and horses also move by (**muscles – skin**) contracting and pulling (**bones – hair**), just like humans.

② What does the difference in bone length and shape among animals depend on?
Choose the correct answer from below.

ⓐ Body color.
ⓑ How they live (how they run, fly, etc).

B Exercise

1 ① Which is the main role of the skull? Fill in the blank with the correct word.

To protect the .....

② Which of the following sentences is correct about the backbone?
Choose the correct answer from below.

ⓐ The backbone is made up of one long unbendable bone.
ⓑ The backbone is made up of many small connected bones, so you can bend your body.

2 ① Which statement correctly explains the structure of a dog's front leg?
Choose the correct answer from below.

ⓐ It has joints (bending parts) just like humans.
ⓑ It is made up of one connected hard bone and does not bend anywhere.

② Which statement correctly explains the body structure of animals ?
Choose the correct answer from below.

ⓐ The bone shapes differ from an animal to another because each animal is adapted to specific types of movement
ⓑ The mechanism of muscles moving bones follows completely different rules for humans and animals.

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Enrichment Corner

Ship of the Desert (The Camel)

The camel has an amazing body structure that helps it adapt to the harsh desert environment, as its body has:

1 Hump

- Located on the camel's back, it plays a vital role as an energy reservoir because it stores fat inside the hump to supply its muscles with energy when food is not available.
- The camel stores fats only on its back (inside the hump)... G.R.? to allow the rest of its body to cool down easily in the extreme desert heat.

Take care :

The camel stores fat inside its hump, not water.

2 Calluses

These are thick leathery pads at its leg joints to protect them when sitting down, as they absorb shocks.

3 Toes

The bones of the camel's toes spread widely to both sides when they touch the ground while walking. This increases the surface area touching the ground to distribute the camel's body weight and prevent its feet from sinking into the sand.

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CHAPTER 1 SUMMARY

The body consists of some parts, including

Body parts	Function	Definition
Muscles	• They are soft body parts that cause the movement of bones.	• They help the body to move.
Bones	• They are hard and strong structures that form the body skeleton.	**They have a main role in:** • Supporting the body. • Protecting the organs of the body like the brain and heart.
Joints	• It is the place (location) where two or more bones connect (meet).	• They help in connecting bones to each other.
Cartilage	• It acts as a cushion between the ends of bones.	• It reduces rubbing (friction) of bones against each other, which protects the bones from wear out during movement.
Skeleton	• It is the structure in which many bones combine to form the whole body.	• It supports the body. • It helps the body move in cooperation with muscles and joints. • It protects some organs of the body.

Types of joints according to the type of movement they allow

Joints that allow movement in more than one direction

Shoulder joint

Hip joint

Wrist joint

Joints that allow movement in one direction

Elbow joint

Finger joints

Knee joint

Ankle joint

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Some parts of the skeleton and their functions

Skull

- It consists of strong bones acting like a helmet.
- It protects the brain.

Ribs

- They consist of thin bones found on both sides of your chest to form a cage-like shape.
- They protect the heart and lungs.

Backbone

- It consists of small bumpy bones lined up vertically and connected in a single line.
- It acts as a pillar that supports the whole body.
- It provides the body with flexibility that helps it bend and move in different directions.

Animal Bodies

Animals are similar to humans in having

Skeleton (contains many bones)

Similar to the human skeleton that helps them move.

Muscles

When they contract, they pull the attached bones so body parts move.

Joints

Help in moving the bones easily "like leg joints."

- **Animals differ according to their movement and their needs in:**
  - Shape and length of bones.
  - Muscle strength.

Examples

Rabbit

Has strong and long back legs (hind limbs) that help it jump quickly.

Dog

Has limbs that help it walk and run steadily.

Cat

Has flexible muscles and joints that help it jump, climb, and move lightly.

Review on Chapter 1

To review this chapter look at the **Assessment Book** "Part 3 : Final Revision".

In the Assessment Book :

Try to answer :

- Test (1) [in part (1)]
- Weekly Assessment (2) [in part (2)]

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General Exercises ON CHAPTER 1

Answered

Questions signed by (📄) are taken from the "Performances and Assessments Book"

1 Choose the correct answer:

1. A person stretches his arm because .....
   - ⓐ the inner muscle of the arm contracts.
   - ⓑ the outer and inner muscles of the arm relax.
   - ⓒ the outer muscle of the arm contracts.
   - ⓓ the inner and outer muscles of the arm contract.
2. While bending the arm, the inner muscle of the upper part of the arm becomes .....
   - ⓐ more hard and short.
   - ⓑ less hard and long.
   - ⓒ more hard and long.
   - ⓓ less hard and short.
3. Muscles often work in pairs, for example to bend the arm, the inner muscle ..... and the outer muscle .....
   - ⓐ contracts – contracts.
   - ⓑ relaxes – relaxes.
   - ⓒ contracts – relaxes.
   - ⓓ relaxes – contracts.
4. All of the following are functions of bones, except .....
   - ⓐ supporting the human body.
   - ⓑ protecting the brain.
   - ⓒ connecting muscles together.
   - ⓓ protecting the heart.
5. The ..... acts as a cushion between the ends of the bones.
   - ⓐ joint
   - ⓑ cartilage
   - ⓒ muscle
   - ⓓ backbone
6. Which of the following is a joint in the upper part of the human body? .....
   - ⓐ Hip joint.
   - ⓑ Knee joint.
   - ⓒ Ankle joint.
   - ⓓ Elbow joint.
7. The joint that moves in a circular motion is the ..... joint.
   - ⓐ knee
   - ⓑ elbow
   - ⓒ wrist
   - ⓓ finger
8. Among the body joints that move in only one direction is the ..... joint.
   - ⓐ ankle
   - ⓑ wrist
   - ⓒ hip
   - ⓓ shoulder
9. The left hand contains ..... joints.
   - ⓐ 14
   - ⓑ 15
   - ⓒ 16
   - ⓓ 17
10. The shoulder joint .....
    - ⓐ moves forward and backward only.
    - ⓑ has limited motion.
    - ⓒ is fixed and does not move.
    - ⓓ can move in more than one direction.
11. The hip joint .....
    - ⓐ moves in only one direction.
    - ⓑ is fixed and does not move.
    - ⓒ is located in the lower part of the body.
    - ⓓ has limited motion.

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⑫ The skeleton of the human body is made up of about ..... connected bones.

ⓐ 200 ⓑ 206 ⓒ 210 ⓓ 220

⑬ All of the following are functions of the skeleton, except .....

ⓐ contracting and relaxing to move the body.

ⓑ supporting the whole body.

ⓒ protecting some organs of the body.

ⓓ helping in body movement.

⑭ The ribs consist of thin ..... found on both sides of the chest to form a cage-like shape.

ⓐ muscles ⓑ bones ⓒ cartilages ⓓ. joints

⑮ The human body can bend in different directions due to the presence of the .....

ⓐ backbone. ⓑ heart. ⓒ ribs. ⓓ skull.

⑯ The backbone consists of .....

ⓐ thin bumpy bones found on both sides of the chest.

ⓑ small bumpy bones lined up vertically and connected in a single line.

ⓒ long parallel bones in the middle of the chest.

ⓓ large bones found in the back.

⑰ Humans and rabbit are similar in .....

ⓐ muscle strength. ⓑ bone shape.

ⓒ having a backbone. ⓓ bone length.

⑱ The rabbit has ..... , so it can jump quickly.

ⓐ long forelimbs ⓑ short forelimbs

ⓒ long hind limbs ⓓ short hind limbs

2 Choose all the correct answers:

① Among the joints that move in only one direction are .....

ⓐ knee. ⓑ hip. ⓒ elbow. ⓓ ankle.

② Among the joints of the upper part of the body are .....

ⓐ elbow. ⓑ wrist. ⓒ knee. ⓓ shoulder.

③ The skeleton protects the .....

ⓐ brain. ⓑ legs. ⓒ heart. ⓓ lungs.

④ Cats and dogs are similar in the presence of .....

ⓐ bones. ⓑ feathers. ⓒ joints. ⓓ muscles.

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3 Put (✓) or (x):

① Muscles are soft body parts that locate under the skin. ( )
② The contracting and relaxing of bones makes the human body move. ( )
③ While stretching the arm, the outer muscle of the upper part of the arm becomes harder than the inner muscle. ( )
④ When lifting a load, the inner muscle of the upper part of the arm contracts and the outer muscle relaxes. ( )
⑤ Muscles often work in pairs to cause movement. ( )
⑥ The human body consists of soft bones. ( )
⑦ Joints contain cartilages. ( )
⑧ The wrist joint moves in only one direction. ( )
⑨ The number of joints in the fingers of both hands is 30 joints. ( )
⑩ The knee joint helps in walking and running. ( )
⑪ The ankle joint moves in a circular motion. ( )
⑫ The skeleton of the human body consists of a group of connected muscles. ( )
⑬ The skull is a part of the skeleton and looks like a helmet. ( )
⑭ The ribs allow the body to bend in all directions. ( )
⑮ The backbone protects the heart and lungs. ( )
⑯ Rabbits move from one place to another as a result of the contraction of bones pulling the muscles. ( )
⑰ The elbow joint in a dog is similar to the elbow joint in human. ( )
⑱ Cats and birds have the same bone length. ( )

4 Correct the underlined words:

① When the inner muscle contracts, the arm stretches. (.....)
② To put a pen on the table, the inner muscle of the upper part of the arm contracts. (.....)
③ When bending the arm, the inner muscle of the upper part of the arm becomes longer and more hard. (.....)
④ Muscles are hard and strong parts. (.....)
⑤ Muscles reduce bones from rubbing against each other. (.....)
⑥ Shoulder and elbow joints can move in a circular motion. (.....)
⑦ The wrist joint is found in the lower part of the body. (.....)
⑧ The backbone protects the brain. (.....)
⑨ The ribs are located in the abdominal area. (.....)
⑩ During animal movement, muscles relax to pull the body's bones. (.....)
⑪ The elbow joint in the human arm is similar to the elbow joint in the hind limb of a dog. (.....)

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5 Choose the correct answer from those between brackets:

① The human body has soft ..... (muscles – bones)
② When the ..... muscle contracts, the arm stretches. (inner – outer)
③ When ..... the arm, the outer muscle relaxes. (bending – stretching)
④ Bones protect organs like ..... (heart – cartilage)
⑤ Cartilage is found between the ends of ..... (bones – muscles)
⑥ ..... help in connecting bones to each other. (Cartilages – Joints)
⑦ The elbow joint moves in ..... (different directions – one direction)
⑧ The fingers of the left hand contain ..... joints. (14 – 15)
⑨ The skeleton of the human body is made up of about ..... connected bones. (200 – 206)
⑩ The backbone consists of ..... bumpy bones. (small – large)
⑪ The ribs consist of ..... bones. (thick – thin)
⑫ The rabbit has strong and ..... hind limbs that help it jump quickly. (long – short)

6 Write the scientific term of each of the following:

① Soft body parts locate under the skin that cause the movement of bones. (.....)
② The muscle that contracts when bending the arm. (.....)
③ The muscle that contracts when stretching the arm. (.....)
④ Hard and strong structures that form the body skeleton. (.....)
⑤ The place where two or more bones connect. (.....)
⑥ It acts as a cushion between the ends of bones. (.....)
⑦ They exist in joints to reduce the friction of bones against each other. (.....)
⑧ The framework in which many bones combine to form the whole body. (.....)
⑨ A part of the skeleton acts as a pillar that supports the whole body. (.....)
⑩ They consist of thin bones found on both sides of the chest to form a cage-like shape. (.....)
⑪ A part of the skeleton consists of strong bones acting like a helmet. (.....)

7 Complete the following sentences :

① The human body can move because muscles ..... and .....
② When stretching the arm, the ..... muscle becomes shorter.
③ When placing glasses on the table, the ..... muscle in the arm relaxes.
④ Muscles work in ..... , where one muscle contracts and the other one relaxes.
⑤ Bones protect the organs of the body such as the ..... and .....
⑥ The ..... protects bones from wearing out during movement.
⑦ Some joints move in one direction such as ..... and ..... joints.

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⑧ The wrist, ... and ..... joints move in more than one direction.
⑨ Fingers of both hands contain ..... joints.
⑩ The skeleton consists of the ..... in the head area, the ribs in the ..... area and the ..... which acts as a pillar that supports the whole body.
⑪ Ribs protect the ..... and .....
⑫ The ..... in the back area allow the body to bend in different directions.
⑬ The backbone consists of ..... bones lined up .....
⑭ Cats and rabbits are similar in having ..... and ..... that help them move.
⑮ Flexible ..... and ..... help cats jump, climb and move lightly.
⑯ The elbow joint in human is similar to the elbow joint in the ..... of the dog.

8 Give reasons for:

① Muscles help the body to move.
.....

② Muscles often work in pairs.
.....

③ To lift a heavy load, the inner muscle of the upper part of the arm contracts.
.....

④ For stretching the arm, the outer muscle of the upper part of the arm becomes shorter and more hard.
.....

⑤ Bones have great importance to the human body.
.....

⑥ Joints have great importance in the movement of the human body.
.....

⑦ Cartilage has a great importance to the bones of the human body.
.....

⑧ The skeleton has a great importance to the human body.
.....

⑨ The skull consists of solid bones.
.....

⑩ Ribs consist of thin bones found on both sides of the chest to form a cage-like shape.
.....

⑪ The backbone consists of small bumpy bones lined up vertically and connected in a single line.
.....

⑫ The rabbit can jump easily.
.....

⑬ The concept of movement in a dog is similar to the concept of movement in a cat.
.....

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9 What happens ...?

① When muscles stop contracting and relaxing.

.....

② When the inner muscle of the upper part of the arm contracts.

.....

③ When the outer muscle of the upper part of the arm contracts.

.....

④ When the muscle attached to one of the bones contracts.

.....

⑤ When the muscle attached to one of the bones relaxes.

.....

⑥ If there is no joints in the human body.

.....

⑦ If there is no cartilage between the bones.

.....

⑧ If the backbone consisted of a single long bone.

.....

⑨ If the rabbits have very short hind limbs.

.....

⑩ If there is no muscles connected to the bones in the dog's body.

.....

⑪ If we lost all our muscles and were left with only our bones.

.....

10 What is meant by (Define):

① Muscles : .....

② Bones : .....

③ Joint : .....

④ Cartilage : .....

⑤ Skeleton : .....

11 Cross out the odd word:

① Knee joint – Elbow joint – Ankle joint – Shoulder joint. (.....)

② Shoulder joint – Ankle joint – Hip joint – Wrist joint. (.....)

12 Compare between:

①

Point of comparison	Shoulder joint	Elbow joint
• Direction of movement :	.....	.....

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②

Points of comparison	Ribs	Backbone
• Location :	.....	.....
• Description :	.....	.....
• Function :	.....	.....

③

Points of comparison	Dog's limbs	Rabbit's limbs
• Structure :	.....	.....
• Function :	.....	.....

13 What is the function of each of the following:

① Muscles: .....
② Bones: .....
③ Joints: .....
④ Cartilages: .....
⑤ Skeleton: .....

14 Give one example of each of the following:

① One of the arm joints that moves in only one direction. (.....)
② One of the joints in the lower part of the body that moves in different directions. (.....)
③ One of the parts of the skeleton that protects the brain. (.....)
④ An animal with long and strong hind limbs. (.....)

15 Look at the opposite figures, then complete:

① The inner muscles of the upper part of the arm contract in figure ..... and relax in figure .....

② The outer muscles of the upper part of the arm contract in figure ..... and relax in figure .....

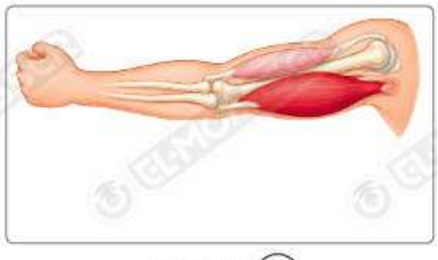

Figure (A)

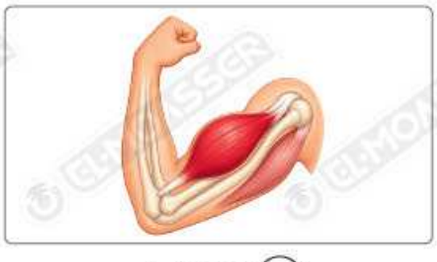

Figure (B)

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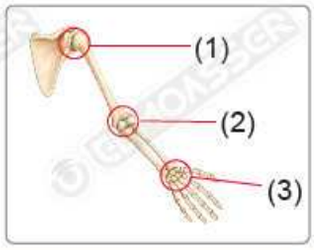
16 **From the opposite figure, determine the number of joint(s) that:**

① Can move in different directions:

.....

② Can move in one direction:

.....



17 **Look at the opposite figure, then answer:**

① What does the opposite figure represent?

.....

② What do numbers (1) , (2) and (3) represent?

(1) .....

(2) .....

(3) .....

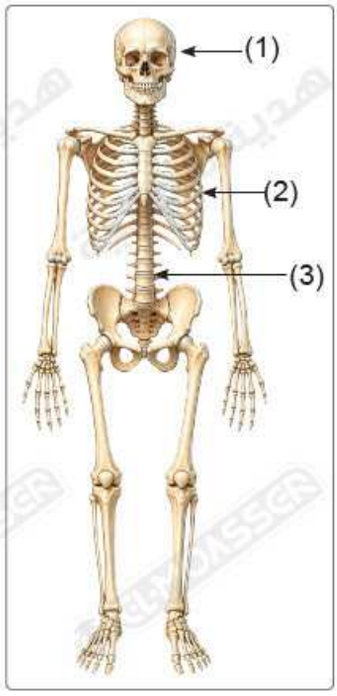
③ What is its importance?

.....

.....

④ Determine the direction of movement of part (3).

.....



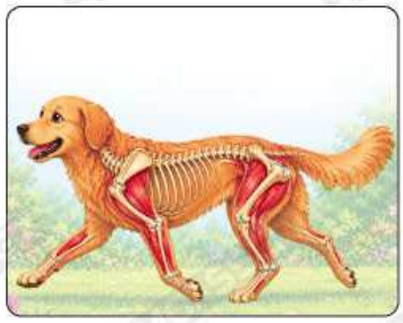
18 **"Differences in the shape of bones means differences in function".**

• Do you agree with this statement?

.....

• Support your answer with examples from the pictures.

.....



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